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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,721	01/09/2005	Jean-Luc Robert	PF020085	2969

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Joseph J. Laks
Thomson Licensing LLC
2 Independence Way, Patent Operations
PO Box 5312
PRINCETON, NJ 08543

EXAMINER	
SINGH, HIRDEPAL	
ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/520,721	ROBERT ET AL.	
	Examiner	Art Unit	
	HIRDEPAL SINGH	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 December 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the amendment filed on December 26, 2007. Claims 1-9 are pending and have been considered below.

Response to Arguments

2. The amendment properly addressed and corrected the informalities in claims 2 and 7. Therefore, the objection to claims 2-5 and 7-9 is withdrawn.

3. Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 2, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts et al. (US 6,405,022) in view of Samuels (US 2001/0044280) and further in view of Baltus (US 6,282,413).

Regarding claim 1:

Roberts et al discloses a VHF adapter comprising

a first down conversion chain and a second up conversion chain (figure 1; column 1, lines 45-48), wherein

the first chain comprises a first mixer (18 in figure 1) followed by a second mixer (16 in figure 1), and

the second chain, a third mixer (14 in figure 1) followed by a another mixer i.e. fifth mixer (12 in figure 1).

Roberts et al discloses all of the subject matter as described above except for specifically teaching (1) the second chain (up conversion) has a fourth mixer followed by third mixer and preceding a fifth mixer; (2) all the local frequencies necessary for these five mixers are obtained from a very stable single reference oscillator.

However, regarding item (1) above, Samuels in the same field of endeavor discloses a transceiver system with chains of down conversion and up conversion mixers and filters where the up conversion chain has three mixers (710, 713, 717 in figure 7) i.e. third, fourth and fifth one.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to implement the up conversion chain of Samuels by using three mixers in Roberts system and a total of five mixers where the fourth mixer between third and fifth one is mixing the output of previous mixer with the high frequency of the synthesizer in the GHz range in order to get the signal in the frequency range which is in accordance with the required standard by using the same components to save the device area and to make it less expensive.

Regarding item (2) above, Baltus, in the same field of endeavor discloses a multistage frequency conversion system and method with a single local oscillator where all the frequency conversion stages (figures 2 and 3) have mixers in transceivers for up-

converting and down-converting (figures 2, 7 and 9; column 3, lines 1-10) the frequencies by mixing the incoming signal with the frequency signal obtained from a stable single or common local oscillator (10 in figure 2 and 3; abstract; column 3, lines 35-38 and 46-56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use a single common local oscillator as taught by Baltus to provide all frequencies necessary for the all mixers in the Roberts and Samuels system as above, to take advantage of arrangement of the Baltus system frequency conversion stages that one oscillator circuit can be dispensed with, result in saving components, chip area, cost, and reducing power dissipation and weight which is an important factor in the mobile devices, also implementation of only one oscillator is easy in the integrated circuit and results in stable frequency of the oscillator and the phase locked loop circuit.

Regarding claim 6:

Roberts et al discloses a VHF adapter comprising a first down conversion chain and a second up conversion chain (figure 1; column 1, lines 45-48), wherein

a first down conversion chain and a second up conversion chain (figure 1; column 1, lines 45-48), wherein

the first chain comprises a first mixer (18 in figure 1) followed by a second mixer (16 in figure 1), and

the second chain, a third mixer (14 in figure 1) followed by a another mixer i.e. fifth mixer (12 in figure 1).

Roberts et al discloses all of the subject matter as described above except for specifically teaching a Radio-frequency transmission system comprising at least one base station and at least one subscriber device the subscriber device comprises an interior unit and an exterior unit which are linked by a cable; second chain (up conversion) has a fourth mixer followed by third mixer and preceding a fifth mixer; all the local frequencies necessary for these five mixers are obtained from a very stable single reference oscillator.

However, Samuels in the same field of endeavor discloses a transceiver system where a Radio-frequency transmission system comprising at least one base station and at least one subscriber device (figure 1) the subscriber device comprises an interior unit and an exterior unit which are linked by a cable (104 and 106 in figure1), and system has chains of down conversion and up conversion mixers and filters where the up conversion chain has three mixers (710, 713, 717 in figure 7) i.e. third, fourth and fifth one.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to implement the up conversion chain of Radio-frequency transmission system comprising a base station and a subscriber device of Samuels' by using three mixers in Roberts system and a total of five mixers where the fourth mixer between third and fifth one is mixing the output of previous mixer with the high frequency of the synthesizer in the GHz range in order to get the signal in the frequency range which is in accordance with the required standard by using the same components to save the device area and to make it less expensive.

Baltus, in the same field of endeavor discloses a multistage frequency conversion system and method with a single local oscillator where all the frequency conversion stages (figures 2 and 3) have mixers in transceivers for up-converting and down-converting (figures 2, 7 and 9; column 3, lines 1-10) the frequencies by mixing the incoming signal with the frequency signal obtained from a stable single or common local oscillator (10 in figure 2 and 3; abstract; column 3, lines 35-38 and 46-56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use a single common local oscillator as taught by Baltus to provide all frequencies necessary for the all mixers in the Roberts and Samuels system as above, to take advantage of arrangement of the Baltus system frequency conversion stages that one oscillator circuit can be dispensed with, result in saving components, chip area, cost, and reducing power dissipation and weight which is an important factor in the mobile devices, also implementation of only one oscillator is easy in the integrated circuit and results in stable frequency of the oscillator and the phase locked loop circuit.

Regarding claims 2 and 7:

Roberts et al discloses all of the subject matter as described above and further discloses the single reference oscillator drives a harmonics generator (76 in figure 2; column 3, lines 25-30) inserted into a phase loop dielectric resonator oscillator using an SPD system (72 in figure 2) to obtain on the one hand after multiplication by two (22 in figure 1, 38 in figure 2; as clearly stated that the frequency conversion block can be

multiply by N "column 7, lines 20-21" where N could be 2) a first local frequency energizing the first (18 in figure 1) and fifth (12 in figure 1) mixers.

Roberts et al discloses all of the subject matter as described above except for specifically teaching a first very narrow filter to obtain a second local frequency for energizing the second and the third mixers.

However, Samuels in the same field of endeavor discloses a transceiver system with chains of down conversion and up conversion mixers and filters where a first very narrow filter (805 in figure 8 which is controlled by a controller as shown in figure 4) to obtain a second local frequency for energizing the second and the third mixers.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to implement the narrow filter of Samuels in Roberts system in order to take advantage of the characteristic of the narrow filters which produces a precise frequency as a piezoelectric type crystal is used so the conversion process is easier as the precise frequency to up or down convert is achieved.

6. Claims 3-5, 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roberts et al. (US 6,405,022) in view of Samuels (US 2001/0044280) in view of Baltus (US 6,282,413), as applied to claims 2 and 7 above, and further in view of Shenoy (US 6,310,386).

Regarding claims 3 and 8:

Roberts et al discloses all of the subject matter as described above except for specifically teaching the single reference oscillator furthermore drives an agile

frequency synthesizer so as to obtain variable frequencies for energizing the fourth mixer; and a second very narrow filter is placed between the output of the third mixer and an input of the fourth mixer so that, the intermediate frequency for energizing the third mixer being a very low frequency pure frequency, the signal delivered by this third mixer can be filtered by the second very narrow filter which energetically rejects the second local frequency and the image frequency signal.

However, Samuels in the same field of endeavor discloses a transceiver system with chains of down conversion and up conversion mixers and filters where reference oscillator furthermore drives a frequency synthesizer (703 in figure 7 which is controlled by controller 405 as shown in figure 4) so as to obtain variable frequencies for energizing the fourth mixer.

Shenoy in the same field of endeavor discloses a very narrow filter is placed between the output of the third mixer and an input of the fourth mixer (611 in figure 6) so that, the intermediate frequency for energizing the third mixer being a very low frequency pure frequency, the signal delivered by this third mixer can be filtered by the second very narrow filter which energetically rejects the second local frequency and the image frequency signal.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to implement the frequency synthesizer to energize the mixer and to use the SAW filter of in Roberts system in order to take advantage of the characteristic of the narrow filters which produces a precise frequency as a piezoelectric type crystal

is used so the conversion process is easier as the precise frequency to up or down convert is achieved.

Regarding claim 4:

Roberts et al discloses all of the subject matter as described above except for specifically teaching the first and second very narrow filters are surface wave filters.

However, Shenoy in the same field of endeavor discloses very narrow filter placed between the mixers is a SAW filter (611 in figure 6; column 11, lines 18-22) so that, the intermediate frequency for energizing the third mixer being a very low frequency pure frequency, the signal delivered by this third mixer can be filtered by the second very narrow filter which energetically rejects the second local frequency and the image frequency signal.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to implement the first and second very narrow filters as surface wave filters or the SAW filters in Roberts system as narrow SAW filters produces a precise frequency because a piezoelectric type crystal is used so the conversion process is easier to up or down convert with the precise frequency and also implements the image rejection as shown by Shenoy.

Regarding claims 5 and 9:

Roberts et al discloses all of the subject matter as described above and further discloses that the system is able to switch between different modes to transmit and receive different frequencies except for specifically teaching frequency plan of the first to fifth various mixers makes it possible to obtain, by simple switching of the frequencies

of the harmonics generator and of the agile synthesizer and by a single change of the first and second_surface wave filters, four configurations for two distinct operators compatible with a cable network.

However, Samuels in the same field of endeavor discloses a transceiver system with chains of down conversion and up conversion mixers and filters where reference oscillator furthermore drives a frequency synthesizer (703 in figure 7 which is controlled by controller 405 as shown in figure 4) and different configurations of frequencies for different user can be obtained by controlling the synthesizers and frequency generators.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to obtain by simple switching of the frequencies of the harmonics generator and of the synthesizer as in the Samuels system and to get four configurations for two distinct operators compatible with a cable network by combining the first and second surface wave filters of Shenoy in the Roberts system in order to make it possible to use the same adapter for receiving and transmitting the RF signals and IF signals with a good degree of frequency stability and without increasing the cost of the equipment unexpectedly.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HIRDEPAL SINGH whose telephone number is (571)270-1688. The examiner can normally be reached on Mon-Fri (Alternate Friday Off)8:00AM-5:00PMEST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. S./
Examiner, Art Unit 2611
March 6, 2008
/Shuwang Liu/
Supervisory Patent Examiner, Art Unit 2611